

Audit

Report



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**MANAGEMENT OF DEFENSE FINANCE AND
ACCOUNTING SERVICE MID-TIER SYSTEMS**

Report No. 99-056

December 18, 1998

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Acronyms

DFAS	Defense Finance and Accounting Service
DTI	Directorate for Technical Infrastructure
FSAs	Financial Systems Activity
FSO	Financial Systems Organization
ISO	Infrastructure Services Organization



INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
400 ARMY NAVY DRIVE
ARLINGTON, VIRGINIA 22202

December 18, 1998

MEMORANDUM FOR DIRECTOR, DEFENSE FINANCE AND ACCOUNTING
SERVICE

SUBJECT: Management of Defense Finance and Accounting Service Mid-Tier
Systems (Report No. 99-056)

We are providing this report for information and use. The report is the result of DoD Hotline allegations concerning the management of Defense Finance and Accounting Service Mid-Tier automated information systems.

Management comments on a draft report were considered in preparing this report. The Defense Finance and Accounting Service comments conformed to the requirements of DoD Directive 7650.3; therefore, additional comments are not required.

We appreciate the courtesies extended to the audit staff. Questions on the audit should be directed to Ms. Kimberley A. Caprio, at (703) 604-9139 (DSN 664-9139) (kcaprio@dodig.osd.mil) or Mr. Eric L. Lewis at (703) 604-9144 (DSN 664-9144) (elewis@dodig.osd.mil). See Appendix E for the report distribution. The audit team members are listed inside the back cover.

A handwritten signature in black ink, reading "Robert J. Lieberman", is positioned above the printed name.

Robert J. Lieberman
Assistant Inspector General
for Auditing

Office of the Inspector General, DoD

Report No. 99-056
Project No. 8FG-8007

December 18, 1998

Management of Defense Finance and Accounting Service Mid-Tier Systems

Executive Summary

Introduction. This report is based on an allegation to the DoD Hotline that Defense Finance and Accounting Service (DFAS) did not adequately manage its Mid-Tier computing assets. Mid-Tier systems are client/server systems that offer more processing flexibility than mainframe systems by allowing computer applications to operate on multiple databases at multiple locations in a seamless manner transparent to the end user.

The management of DFAS Mid-tier systems is governed by two documents. DFAS Regulation 8000.1-R, "Concept of Operations for Maintaining DFAS Mid-Tier Computing Platforms" September 14, 1994, initiated the Mid-Tier policy and the "Mid-Tier Policy and Procedures" September 4, 1996, was meant to ensure close cooperation between the Directorate for Technical Infrastructure (DTI), the Financial Systems Activities (FSAs), and other organizations in managing and maintaining the UNIX Mid-Tier computers and the Oracle relational database environments.

The Mid-Tier policies affect all DFAS Centers as well as the Infrastructure Services Organization (ISO) in Indianapolis, Indiana. The FY 1998 cost to operate and maintain the Mid-Tier systems was \$16.7 million.

DFAS underwent a reorganization in March 1998. Prior to the reorganization, the DFAS Financial System Organization (FSO), headquartered at Indianapolis, Indiana, was responsible for the management and maintenance of DFAS Mid-Tier systems. The FSO reported directly to the DFAS Deputy Director, Information Management (who also served as the Director, FSO). The FSO's Mid-Tier Management Organization also located in Indianapolis was responsible for Mid-Tier systems policies and procedures. The seven FSAs were directly subordinate and reported to the Mid-Tier Management Organization. In the reorganization, the FSO was renamed the ISO and retained responsibility for the management and maintenance of Mid-Tier systems. The ISO accomplishes this through its DTI, which was formerly the Mid-Tier Management Organization.

Audit Objectives. The overall audit objective was to determine whether the complaint to the DoD Hotline had merit. Specifically, we assessed the roles and responsibilities of the ISO and FSAs and evaluated their effectiveness in supporting automated systems.

Audit Results. The lack of adequate communication between the DTI and the FSAs precluded full consideration of the FSAs input into the DFAS Mid-Tier systems policy

decisions. Additionally, appropriate performance measures and monitoring tools were lacking after the 1996 Mid-Tier systems restructuring. As a result, DFAS did not fully consider FSAs input into DFAS management and policy implementation for Mid-Tier systems. In addition, neither the DTI nor the FSAs could ensure the efficient development of Mid-Tier systems. See Part I of this report for further details.

Summary of Recommendations. We recommend that DFAS establish a specific date for resuming quarterly reviews and establish documentation rules for Mid-Tier systems management. We also recommend that DFAS establish a quarterly review agenda to discuss staffing concerns and alternatives, system access, system security, long-range goals, policy and procedure change standards, and policy and procedure documentation standards. Also, performance measurement and monitoring tools must be established to track the efficiency of Mid-Tier systems projects. Additional management controls are needed to ensure success of the program.

Management Comments. The DFAS concurred with the recommendations and has taken action to implement the recommendations. The DFAS reactivated the quarterly Mid-Tier working group and scheduled the first meeting for December 1998. The DFAS plans to include issues on staffing, system access and security, and policy and procedures during the quarterly reviews. The DFAS has established a milestone of September 1999 for implementing performance measures for Mid-Tier systems projects. The complete text of the management comments is in the Management Comments section of the report.

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Introduction

This report addresses DoD Hotline allegations concerning the management of Defense Finance and Accounting Service (DFAS) Mid-Tier development systems.

Audit Background

Financial System Organization Reorganization. DFAS underwent reorganization in March 1998. Prior to the reorganization, the DFAS Financial System Organization (FSO), headquartered at Indianapolis, Indiana, was responsible for the management and maintenance of DFAS Mid-Tier systems. The FSO reported directly to the DFAS Deputy Director, Information Management (who also served as the Director, FSO). The FSO's Mid-Tier Management Organization, also located in Indianapolis, was responsible for Mid-Tier systems policies and procedures. There were seven Financial Systems Activities (FSAs) directly subordinate and reporting to the Mid-Tier Management Organization. Of these seven, all except for Patuxent River, Maryland, were responsible for developing DFAS Mid-Tier applications.

In the reorganization, DFAS re-titled the FSO as the Infrastructure Services Organization (ISO), and placed it under the direct control of the DFAS Director for Information and Technology headquartered at Arlington, Virginia. In addition, DFAS placed the Pensacola, Florida, and Patuxent River, Maryland, FSAs under the direct control of the Director for Information and Technology. The Cleveland, Ohio; Columbus, Ohio; Denver, Colorado; Indianapolis, Indiana; and Kansas City, Missouri, FSAs were placed under the direct control of the individual DFAS Center Directors at those respective geographic locations. In the reorganization, the ISO retained responsibility for the management and maintenance of Mid-Tier systems. The ISO accomplishes this through its Directorate for Technical Infrastructure (DTI). The DTI formerly carried out the same functions as the FSO Mid-Tier Management Organization. The table on the following page illustrates these changes.

Mid-Tier Defined. DFAS refers to its client/server systems as its Mid-Tier systems. Mid-Tier or client/server systems offer more processing flexibility than mainframe systems by allowing computer applications to operate on multiple databases at multiple locations in a seamless manner transparent to the end user. DFAS Mid-Tier development systems are UNIX based and are comprised mainly of Hewlett-Packard and Sun Microsystems minicomputers. The FY 1998 cost to operate the Mid-Tier systems was \$16.7 million.

Mid-Tier Responsibility. Prior to September 1996, the FSAs were responsible for allocating access to the Mid-Tier systems. Subsequent to the 1996 restructuring, the DTI became responsible for allocating Mid-Tier access. The

granter of access rights determines the logical control of the Mid-Tier systems. Logical control is the control exercised through programming regardless of the physical location of the system.

Mid-Tier Management Structure		
	Before Reorganization	After Reorganization
Overall Mid-Tier Responsibility	FSO	ISO
Mid-Tier Policies and Procedures	Mid-Tier Management Office	Directorate, Technical Infrastructure (DTI)
Mid-Tier Development	FSAs	FSAs
FSAs Report To	Mid-Tier Management Office	Directly to the Geographic DFAS Center Director and indirectly to the DTI

ISO Mission. ISO's primary missions are software development and maintenance for finance and accounting systems and technical support for the DFAS infrastructure. The ISO supports more than 100 systems and is actively managing the DFAS Enterprise Local Area Network (the network is the DFAS wide-area network). Before the reorganization, the ISO had 1,400 civilian and 100 military personnel, 5 Directorates, and 7 FSAs. After the reorganization, FSAs personnel reported to a DFAS Center Director; however, their work still supports the DFAS systems and is subject to ISO policy decisions.

Hotline Allegations. The OIG, DoD, Hotline received allegations regarding the 1996 restructuring. Specifically, the allegations stated that the DFAS ISO did not effectively use the resources of its FSAs personnel in managing Mid-Tier development systems prior to the 1996 restructuring. Specific allegations were made regarding policy, staffing, and accomplishing work efficiently and effectively.

Audit Objectives

The overall audit objective was to determine whether the Hotline allegations had merit. Specifically, we assessed the roles and responsibilities of the DTI and FSAs personnel and evaluated their effectiveness in supporting Mid-Tier development systems. See Appendix A for a discussion of the audit scope and methodology and prior coverage.

Communication in Mid-Tier Systems Management

The lack of adequate communication between the DTI and the FSAs precluded full consideration of the FSAs input into the DFAS Mid-Tier systems policy decisions. Additionally, appropriate performance measures and monitoring tools were lacking after the 1996 Mid-Tier systems restructuring. This occurred for the following reasons.

- The DTI cancelled quarterly reviews held between the DTI and FSAs.
- The DTI had not adequately documented Mid-Tier policies and procedures in regard to access, security, and policy changes.
- The DTI experienced staff turnover problems in its management of the Mid-Tier development systems.
- The DTI and FSAs had not acquired appropriate performance measurement and monitoring tools.

As a result, DFAS did not fully consider input by the FSAs into DFAS' management and policy implementation for Mid-Tier systems. In addition, neither the DTI nor the FSAs could ensure that Mid-Tier systems were being developed on the most efficient basis.

Management Communications and Controls

The DTI invoked the 1996 restructuring changes to accomplish the immediate goals of the DFAS Deputy Director, Information Management, to standardize UNIX and Oracle software used on the Mid-Tier systems, thus enhancing performance and security. However, communications between the DTI and the FSAs, to convey policy revisions and to manage DFAS Mid-Tier development systems, were not adequate after the reorganization. The lack of adequate communication precluded full consideration of the FSAs input into the DFAS Mid-Tier systems policy decisions. Likewise, appropriate performance measures and monitoring tools were lacking. Therefore, neither the DTI nor the FSAs could ensure that they were developing Mid-Tier systems on the most efficient basis.

DFAS Mid-Tier Guidance

Mid-Tier Guidance. Since September 1994, DFAS issued guidance on the management of Mid-Tier systems to foster the efficient operation and

maintenance of the systems. In September 1994, the DFAS Deputy Director for Information Management issued the "Concept of Operations for Maintaining Mid-Tier Systems." In September 1996, the same person, also functioning in the role of the DFAS, Director, FSO, issued the "Mid-Tier Policy and Procedures" document. The "Mid-Tier Policies and Procedures" document further defined roles and responsibilities. Most significantly, the Mid-Tier policies and procedures removed the FSAs authority to grant accesses to Mid-Tiers and transferred the authority to the DTI. See Appendix B for a full description of the guidance.

Review of the Hotline Allegations

The Hotline allegations focused on the adequacy of the DFAS Mid-Tier management and control structure, the use of FSA resources by the DFAS ISO, and the impact of the 1996 restructuring. Specifically, the allegations stated that the DTI:

- centralization policy was not efficient,
- staffing levels were inadequate to effectively execute the centralization policy,
- work was unreliable and had to be redone,
- centralization policy had caused some FSAs projects to fail, and
- costs were not adequately tracked to FSAs projects.

Validity of Allegations. We determined that the issues cited in the Hotline allegations were reflective of concerns also expressed by the FSAs during the audit, and that some issues had merit. Based on this evaluation of the validity of the Hotline allegations, we issued preliminary findings in a memorandum to the Director, ISO, and to the FSAs Directors on April 17, 1998. The Director, ISO, and the FSAs Directors concurred with the findings. The following provides details of each allegation and audit results.

Efficiency of Centralized Control. The Hotline complaint alleged that the DTI centralization policy was not efficient. The allegation was substantiated because of a lack of effective communication and the failure to build trust relationships between the DTI and the FSAs. In the 1996 restructuring, DFAS intended to improve system performance and security by centralizing control of Mid-Tier systems under the DTI. The centralization effort was in accordance with the 1994 Concept of Operations, which states that the Mid-Tier systems must be standardized to allow employees to work on any Mid-Tier system without re-training or any noticeable adjustment. In addition, the standardization allowed applications to operate on multiple databases at multiple locations in a seamless manner transparent to the end user. In such an environment, however, system security becomes a more significant issue

because user data and data processing are no longer isolated to a specific computer or terminal with fixed connections between them. Rather, multiple users could have inappropriate access to information.

FSA's personnel at the sites contacted indicated that central control of software development, production, and maintenance was necessary to assure that a set of standard business practices were established and followed within DFAS. They further agreed that limiting powerful system administrator "root" authority to select personnel enhances security.¹ However, FSA's personnel indicated that the implementation of the policy had not been totally effective and caused undue access restrictions to FSA's application developers and software testers and confusion over guidance provided. For example:

- FSA Cleveland personnel stated that the current policy precludes delegation or decentralization of detailed tasks, however the DTI staff was so busy trying to keep up with detailed tasks that DTI development and documentation of central operating standards suffered. Additionally, an FSA Columbus employee stated that now the DTI must create computer programs ("scripts") to test or install an application prior to releasing the programs to the Defense Information Systems Agency, which administers DFAS production systems. The scripts are needed to size the databases and tablespaces correctly so that the application runs efficiently. However, the assigned DTI personnel had not attended planning meetings and were unfamiliar with the application, thus requiring the DTI personnel to test and install software applications they may not understand.

- FSA Columbus personnel stated that the DTI had not provided sufficient written documentation to support the level of access restrictions nor adequately documented DTI and FSA's personnel job descriptions and business procedures. Those FSA personnel stated that DTI personnel tended to cite undocumented rules and procedures and provided contradictory guidance.

- FSA Columbus personnel stated that, while the 1996 Mid-Tier Policies and Procedures document gives DTI its authority; the DTI had not issued a policy memorandum stating why certain access rights would be given or taken away. FSA's personnel stated that they were notified either verbally or found that the access had changed when attempting to complete work. While FSA's personnel acknowledge they would like to regain full access to development systems, they believe that the DTI positions would be better accepted if major decisions were made with FSA's input and those decisions were documented.

The ISO and DTI did not respond directly to specific allegations; however, they were aware of the FSA's concerns and agreed that a lack of effective communications caused many of the problems and have stated that steps will be taken to correct problems and misunderstandings. FSA's system administrators

¹"Root" access or authority within UNIX based systems, and "Oracle 7" within Oracle gives the user absolute control over that particular portion of the Mid-Tier system.

believed that some levels of authority could be delegated to them to accomplish their assigned work. Such a delegation would be consistent with the 1996 Mid-Tier Policies and Procedures that allows the DTI to delegate responsibilities to FSAs where a Mid-Tier development system is present. The DTI, however, indicated that it chose not to delegate because sufficient trust relationships between the DTI and FSAs had not yet been established. However, due to budget constraints the DTI suspended opportunities to develop the trust, such as quarterly meetings, in 1996.

Adequacy of DTI Staffing. The Hotline complaint alleged that the DTI staffing levels were inadequate to effectively execute the centralization policy. We substantiated the allegation. Since the 1996 restructuring requires that the DTI control access to the Mid-Tier systems, it is essential that the DTI accomplish its functions on an efficient basis. However, both ISO and FSAs personnel stated that the DTI had experienced staffing problems. Specifically, turnover and experience were critical problems. For example:

- FSA Pensacola personnel observed that missed systems milestones and unsatisfied requirements continue to occur because resources are not available to satisfy all organizational objectives. Additionally, FSA Pensacola personnel stated that this lack of resources had resulted in adverse schedule impacts and lost developer productivity.

- FSA Columbus and Indianapolis personnel stated that they had waited from hours to weeks for assistance from DTI personnel. Columbus and Indianapolis personnel believe that with increased access and permissions they could have accomplished assigned tasks much sooner.

The FSAs stated that the process had improved somewhat since the reorganization, but still needed work. FSA Pensacola personnel suggest that DFAS Headquarters personnel should address resource constraints and develop a plan to correct this staffing situation. The Pensacola personnel also suggested that the Defense Information Systems Agency personnel and system resources should be considered as an alternative. The Defense Information Systems Agency provides this level of support for DFAS Mid-Tier production systems.

ISO personnel stated that the DTI resource restrictions would continue to be a problem because of funding constraints and turnover due to DTI personnel leaving for higher paying private sector jobs after gaining practical training and experience.

Reliability of DTI Work. The Hotline complaint alleged that DTI work was unreliable and had to be redone. We did not find direct evidence to support the allegation. However, we did find that the level of work required by the DTI and the FSAs was not adequately defined and could lead to inefficient work processes. For example, FSAs personnel were confused about whom would be responsible for script development and the proper allocation of databases so that the applications could be tested and installed efficiently. Before the 1996 restructuring the FSAs were responsible for this; however, now before an application can be fielded DTI personnel must test it on the DTI test system.

The FSAs stated that this requires the DTI personnel to test and install applications they may not completely understand. FSA Cleveland personnel observed that simple tasks that could have been performed by FSAs personnel were being performed by an undermanned and shifting contractor work force. FSA Cleveland personnel suggest that all viable alternatives to the DTI staffing concerns be evaluated to include skilled FSAs personnel.

The Director, ISO did not directly respond to this specific allegation but stated that communication problems existed and would be addressed with FSAs personnel through reestablishment of the quarterly reviews.

Success Rate of FSAs Projects after the 1996 Restructuring. The Hotline complaint alleged that some FSAs projects failed because of the DTI centralization policy. We found that FSAs projects had experienced delays and missed some milestones because of the centralization policy; however, none had failed. Delays do require that additional unplanned resources must be expended to complete projects, therefore, the delays add to project costs. We could not validate the success rate of the FSAs projects because the DTI and the FSAs had not established performance measurements that would quantify the effects of the policy changes on FSAs projects. Neither could we determine on a DFAS-wide basis whether the centralization policy provided benefits.

DTI Project Cost Tracking. The Hotline complaint alleged that the DTI costs were not adequately tracked. We could not substantiate the allegation because FSAs personnel could not cite any instances where DTI costs were not tracked adequately. We spoke with the complainant(s) and ISO budget personnel about the allegations and determined that the complaint was that the DTI costs did not show up as direct project costs. The complainant(s) believe that if these costs were added to the project costs it could show that the centralization policy was not cost effective. While the application of the DTI indirect costs as overhead was appropriate, DTI still needs to establish performance metrics to internally review and then determine whether the centralization policy is efficient on a DFAS-wide basis.

Summary

As a result of the lack of good communication, the DTI and the FSAs could not ensure development of systems on the most efficient basis. Information technology is critical to DFAS operations. Preliminary comments received from the ISO and the FSAs on the results of this audit were responsive and a logical first step toward accomplishing that goal. Other necessary steps are establishing a specific date for resuming the quarterly reviews to discuss and establish Mid-Tier systems documentation rules. For the quarterly reviews to be effective the ISO, DTI, and the FSAs must prepare agendas covering the significant concerns of all parties such as staffing, system access and security,

and policies and procedures. Finally, the parties must be able to track and monitor the performance of Mid-Tier systems decisions; therefore, performance measurement tools are necessary.

Recommendations and Management Comments

We recommend that the Director, Defense Finance and Accounting Service:

1. Require the Infrastructure Services Organization and the Financial Services Activities to establish a specific date for resuming the quarterly reviews to establish documentation rules for Mid-Tier systems.

Management Comments. The Defense Finance and Accounting Service concurred and reactivated the quarterly Mid-Tier working group in September 1998 and scheduled the first meeting for December 1998.

2. Require the Infrastructure Services Organization and the Financial Services Activities to develop an agenda for the quarterly review to discuss staffing, system access and security, and policy and procedures.

Management Comments. The Defense Finance and Accounting Service concurred and will include in their agenda for the quarterly meetings, discussions on staffing, system access and security, and policy and procedures.

3. Require the Infrastructure Services Organization and the Financial Services Activities to develop and implement a plan for Mid-Tier system performance measurement and monitoring tools to track the efficiency of system projects.

Management Comments. The Defense Finance and Accounting Service concurred and is implementing performance measures to track the performance of implementing mid-tier policies and procedures and to accurately track project cost. The measures will be used to make the appropriate decisions. The projected milestone for completion is September 1999.

Appendix A. Audit Process

Scope and Methodology

Work Performed. The objective of this audit was to evaluate the roles and responsibilities within DFAS ISO structure to support automated information systems. The primary missions of the ISO are software development and maintenance for finance and accounting systems and technical support for the DFAS infrastructure. The ISO supports more than 100 finance and accounting related systems and is actively managing the DFAS Enterprise Local Area Network (the Network is the DFAS wide-area network). Before the reorganization, the ISO had 1,400 civilian and 100 military personnel, 5 Directorates, and 7 FSAs. Specifically, we evaluated whether the ISO's DTI and FSAs were supporting the systems in an efficient and effective manner. The scope of the audit was limited in that we did not review the management control program.

The methodology of the review included analyses of DTI documentation and interviews with DFAS personnel. Specifically we:

- Reviewed mission and functions statements,
- Evaluated DTI policies relating to Mid-Tier management,
- Interviewed ISO, DTI and FSAs personnel, and
- Coordinated the results of the review with ISO management for appropriate corrective actions.

DoD-Wide Corporate Level Government Performance and Results Act Goals. In response to the Government Performance and Results Act, the DoD has established 6 corporate level performance objectives and 14 goals for meeting these objectives. This report pertains to the achievement of the following objective and goal.

Objective: Fundamentally reengineer DoD and achieve a 21st century infrastructure. **Goal:** Reduce costs while maintaining required military capabilities across all DoD mission areas. **(DoD-6)**

DoD-Functional Area Reform Goals. Most major DoD functional areas have also established performance improvement reform objectives and goals. This report pertains to the following functional area objective and goal.

Information Technology Management Functional Area. Objective: Provide services that satisfy customer information needs. **Goal:** Improving information technology management tools. **(ITM-3.1)**

General Accounting Office High Area. The General Accounting Office identified several high risk areas in the Department of Defense. This report provides coverage of the Information Management and Technology high risk area.

Use of Computer-Processed Data. We did not use computer-processed data to perform this audit.

Use of Technical Assistance. We did not require technical assistance.

Audit Type, Date, and Standards. We performed this economy and efficiency audit from February 1998 through August 1998 in accordance with auditing standards issued by the Comptroller General of the United States, as implemented by the Inspector General, DoD.

Contacts During the Audit. We visited or contacted individuals and organizations within the DoD. Further details are available on request.

Summary of Prior Coverage

General Accounting Office Report GAO/AIMD-97-41 (OSD Case 1346)
"Defense Financial Management - Immature Software Development Processes at Indianapolis Increase Risk," June 1997.

Inspector General, DoD Report No. 95-270 "Corrective Actions on System and Software Security Deficiencies," June 30, 1995.

Inspector General, DoD Report No. 95-263, "Controls Over Operating Systems and Security Software and Other General Controls for Computer Systems supporting the Defense Finance and Accounting Service," June 29, 1995.

Appendix B. DFAS Mid-Tier Guidance

Since September 1994 DFAS has issued various guidance on the management of Mid-Tier computing platforms. The DFAS Deputy Director for Information Management issued the "Concept of Operations for Maintaining Mid-Tier Computing Platforms," September 14, 1994. To provide further clarification the DFAS, Director, Financial System Organization, issued the "Mid-Tier Policy and Procedures" September 4, 1996. During this time the Deputy Director for Information Management and the Director, Financial Systems Organization, were the same person.

Mid-Tier Computing Platforms. Mid-Tier Computing Platforms is the name of DFAS client/server computers. Client/server computers offer more processing flexibility than mainframe computers. Specifically, the client server architecture provides the necessary environment for applications to operate on multiple databases at multiple locations in a seamless manner transparent to the end user. The DFAS Mid-Tier development computers are UNIX-based and are comprised mainly of Hewlett-Packard and Sun Microsystems minicomputers. The development computers are located at FSAs in Denver, Indianapolis, Kansas City, Columbus, Pensacola, and Cleveland.

Concept of Operations for Maintaining Mid-Tier Computing Platforms. The 1994 Concept of Operations describes the premise and goals, the team approach, written policies and procedures, Mid-Tier access, systems security, and systems access:

- **Premise and Goals.** The basic premise is for the DTI to have the lead responsibility (technical, management, and administrative) for UNIX server platforms. Limiting the need for expertise in UNIX software installation, configuration, and related system management issues to the DTI will reduce costs. The system environment must be sufficiently standardized to allow employees to work on any of the Mid-Tier platforms without retraining or any noticeable period of adjustment. Standardization should make it possible to move development efforts from one platform to the another (interoperability) without any significant impact (assuming capacity is available). However, interoperability goes beyond allowing users to access resources in a seamless uniform manner. Interoperability provides the necessary environment that allows applications to operate on multiple databases at multiple locations in a seamless manner transparent to the end user. This is a requirement for a fully enabled client/server development and implementation process. Enforcement of these DTI standards will be an integral part of these high-level goals.

- **Team Approach.** The team approach will be essential to the successful management of the Mid-Tier platforms. Specifically, the role the DTI takes for itself on this team will be important. The DTI will attempt to be a facilitator more than the expert with regards to both technical information and system standards. There is no way that any one individual or organization can expect to be expert in all areas of the new development technologies. However,

in its role, the DTI will monitor the technologies used, problems encountered, and successes achieved in FSAs development projects. Hence, when an FSAs encounters a problem, the DTI will be able to identify other FSAs who have run into similar problems and offer proven solutions. With regards to standards, the approach taken will be that there is a need for uniformity. Therefore, the DTI will solicit the FSAs for their ideas on the best means to achieve standardization. By having team involvement in determining details, standardization solutions will be more palatable when implemented.

- **Written Policies and Standards.** The DTI will develop written policies and standards. Also, the DTI, with ISO headquarters approval, will distribute and implement the policies and standards.

- **Mid-Tier Access.** The FSAs will control access to their local Mid-Tier platforms. However, as requested by ISO headquarters, it will be necessary to provide access to the DTI and other organizations.

- **System Security.** Security becomes an essential issue with the interoperability and openness necessary for the new development technologies. User data and processing are no longer isolated to a specific computer, host, terminal or personal computer with fixed connections between them. Instead, user data and processing will be spread across a wide spectrum of computer hardware and software with a standard but open set of rules interconnecting them. A consistent, organized approach to security will be necessary to allow openness for the applications to operate effectively and to protect and ensure the integrity of work being done.

- **System Performance.** In the increasingly complex systems environments management of performance and response times will be more complex and yet more critical. It will be necessary to baseline Mid-Tier systems and ELAN performance levels to evaluate application performance. The DTI, ELAN Management team, and the FSAs will share performance measurement responsibility. Consistent metrics and metric reporting across the environment will be essential.

Mid-Tier Policy and Procedures. In the 1996 Mid-Tier Policies and Procedures document DFAS defined the purpose for the document, the need for cooperation, responsibilities, and access rights as follows.

- **Purpose.** In production and development environments, the Mid-Tier policy and procedures document provides UNIX Mid-Tiers and the Oracle Relational Data Base Management System management and maintenance instructions executable by the DTI. The policy and procedures document describes all installation, security, monitoring, diagnostic, recovery, and administrative procedures required to support the Mid-Tier environment.

- **Cooperation.** To ensure close cooperation, the DTI will sponsor quarterly meetings with the developing FSAs and other organizations.

- **Responsibilities.** The DTI is responsible for all aspects of the Mid-Tier platforms. Also, the DTI is responsible for ensuring that all DFAS Mid-Tier environments comply with DoD and DFAS security policies and regulations. The DTI can delegate responsibilities to FSAs sites where a Mid-Tier development platform is present. Personnel at those sites are known as local systems administrators and local database administrators. The local systems administrators will be responsible for the development platforms at their site, including compliance with all DTI developed policies, procedures, and standards. The local database administrators will be responsible for the Oracle Relational Data Base Management System on the development platforms at their site, including compliance with all DTI developed policies, procedures, and standards. All production and support software upgrades will be installed first on the DTI test platform for validation. The Local Systems Administrators and each project officer will be allowed to test applications on the DTI test platform, in accordance with reasonable resource usage and availability. The Local Database Administrators and the DTI are responsible for the performance of the database on the Mid-Tier development.

- **UNIX Access.** The DTI will retain root access (unrestricted access to UNIX platforms) to all Mid-Tier systems. The DTI has the option to approve root-like privileges for personnel co-located with the Mid-Tier development system. No more than two co-located personnel will have root-like access, unless special circumstances warrant changing that number. The number of local systems administrators will not exceed three. The local systems administrators will have the authority of adding new users and groups to their local Mid-Tier development systems. The DTI will have the responsibility of adding new users and groups to all Mid-Tier production systems.

- **Oracle Access.** The DTI retains oracle 7 (unrestricted access to the Oracle database) or database administrators access to all Mid-Tier systems. The DTI has the option to approve oracle 7-like privileges for personnel co-located with the Mid-Tier development system. No more than two co-located personnel will have oracle 7-like access, unless special circumstances warrant changing that number. The number of Local Database Administrators will not exceed three. The Local Database Administrators have the responsibility of enrolling new users and developers into the Oracle database on Mid-Tier developments.

Appendix C. Inspector General Preliminary Results Memorandum



INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
400 ARMY NAVY DRIVE
ARLINGTON, VIRGINIA 22202

APR 17 1998

MEMORANDUM FOR DIRECTORS, FINANCIAL SYSTEMS ACTIVITIES

SUBJECT: Preliminary Results on the Audit of Allegations Related to Defense Finance and Accounting Service (DFAS) Support of Automated Information Systems (Project No. 8FG-8007)

Our review of the allegations (Enclosure 1) began on January 26, 1998. We visited the Financial Systems Organization (FSO) in Indianapolis and the Financial Systems Activities (FSA) in Columbus and Indianapolis, respectively. Based upon these meetings we were able to arrive at preliminary conclusions about the allegations. We found that the positions of both the FSO and FSA personnel had merit; however, the lack of effective communication between the two groups was the primary cause for the problems. We are providing the results of these meetings (Enclosure 2) for your review and comment before the audit is concluded.

During our entrance conference FSO personnel indicated the Columbus FSA had reported more problems with the mid-tier policy than the other sites and suggested that we begin our audit there. We accepted that suggestion and also visited the Indianapolis FSA. We telephonically briefed the preliminary conclusions to FSO personnel who stated that quarterly reviews, better documentation, and partnerships should be considered as possible solutions.

It is essential that the FSO and FSA personnel work together to ensure that cost effective solutions are found for the DoD automated information systems that they administer. Please canvass your personnel and comment as to whether the particular concerns of your activity have been addressed adequately. Also, please provide your responses by April 27, 1998. If there are any questions, please contact Mr. Eric Lewis, Acting Audit Project Manager, at (703)604-9144 (ELewis@DODIG.OSD.MIL).

A handwritten signature in dark ink, appearing to read "F. Jay Lane", is positioned above the printed name.

F. Jay Lane
Director

Finance and Accounting Directorate

Enclosures

cc: Under Secretary of Defense (Comptroller)
Director, Information and Technology

**Allegations Related to Defense Finance and Accounting Service
Support of Automated Information Systems**

The following allegations were made regarding the FSO management of DFAS automated information systems.

1. Centralizing certain FSA responsibilities at the FSO is not cost effective.
2. The FSA staffing levels are inadequate and have caused FSA development programs to be delayed.
3. FSO work has been unreliable and has to be reworked.
4. The FSO centralization policy has caused some projects to fail.
5. The FSO does not adequately track project costs.

Enclosure 1

**Preliminary Results on the Audit of Allegations Related
to Defense Finance and Accounting Service Support of
Automated Information Systems**

Allegations were made about the performance of the FSO in the following areas:
Centralized Control, Staffing, FSO Work, Project Success, and Project Costing.

Centralized Control: Personnel at the sites visited indicated that central control is necessary to assure that a set of standards are established and followed within DFAS. However, the personnel at those sites indicated that the implementation of the policy had not been totally effective.

- **Standard Business Practices:** FSA personnel stated that the adaptation of standard business practices for software development, production, and maintenance are desirable. Further, limiting all powerful administrator authority (root and Oracle 7) to selected FSO personnel enhances security. Centralized control also allows all DFAS assets to be shared across the Enterprise Local Area Network regardless of location.
- **Implementation Concerns:** FSA personnel believe that undo access restrictions deny application developers the opportunity to properly develop and test software. Therefore, this requires the FSO personnel to attempt to test and install software applications they may not understand. The FSA personnel believe that the FSO has not produced sufficient written documentation to support the level of access restrictions nor adequately documented FSO and FSA personnel job descriptions and business procedures.

We agree that central control is necessary to establish uniform policies and procedures. However, it is also essential that the level of access and restrictions should match the security and business concerns on a cost effective basis. In order to determine the best solution effective communication is required between the FSO and the FSAs. Decisions resulting from these communications should be documented to reflect the benefits and business risks involved. Further, the roles and responsibilities of the effected personnel should be documented and updated when changes occur. It should be noted that the FSO had directed that recent policy decisions be put on the DFAS internal network.

Staffing. Since the FSO controls access to the mid-tier assets, it is essential that the FSO staff have the necessary experience to accomplish this function on a cost effective basis. However, both FSO and FSA personnel have stated that the FSO has

Enclosure 2
Page 1 of 3

experienced staffing problems. Specifically, turnover and experience are critical problems. For example, FSA personnel stated that they have encountered new FSO personnel who have contradicted the policies of their predecessors. Also, FSA personnel stated that they have encountered some FSO personnel who did not seem responsive to FSA concerns. Personnel at both the Columbus and Indianapolis FSAs stated that they had to wait from hours to weeks for some assistance from FSO personnel, which the FSA personnel believe they could have accomplished much sooner (with increased access and permissions). Both FSAs stated that the process has improved somewhat, but still needs work. FSO personnel stated that resource restrictions will continue to be a problem because they are only authorized a limited amount of positions and these personnel can always earn more in the private sector, after gaining practical training and experience. Further, the FSO personnel state that customer (FSA) service must be improved to ensure that DFAS automated information systems are administered on a secure cost effective basis.

We agree that the staffing concerns will continue to be a problem throughout DoD at current funding levels. This will require the FSO and FSAs to pool people, training and funding resources and responsibilities to ensure that automated information systems are developed and maintained on a cost effective basis. However, security and cost concerns must be considered in these decisions.

FSO Work. Personnel from the FSAs stated that the FSO personnel simply did not know enough about the work to get it accomplished in an efficient manner. Further, some jobs can only be done with the developer of the software, such as script development and the proper allocation of databases in a reduced system identifier environment.

We believe that establishing proper communications mediums such as quarterly reviews, will provide FSO and FSA personnel the appropriate opportunity to determine the most cost effective means to accomplish their assigned tasks. Also, performance measures should be established so that FSO and FSA can determine if new business policies and procedures are providing a benefit throughout DFAS. FSO personnel are establishing performance measures and setting goals for responses to customer (FSAs) requests. Measures should also be established and tracked for the performance of the FSAs under these new policies.

Project Success. Columbus and Indianapolis personnel have stated that projects have been delayed but none have failed because of FSA policies. Because of the lack of performance measures costs could not be readily identified related to the delays.

Enclosure 2
Page 2 of 3

Project Costing. Neither Columbus or Indianapolis personnel cited any instances where costs were not tracked adequately. However, FSO personnel stated that delays could result in increased costs to the customer. The establishment of performance measures will allow FSO and FSA personnel to accurately track costs and make appropriate decisions.

Enclosure 2
Page 3 of 3

Appendix D. Director, Infrastructure Services Organization Response to Inspector General Preliminary Results Memorandum



DEFENSE FINANCE AND ACCOUNTING SERVICE
INFRASTRUCTURE SERVICES ORGANIZATION
8899 EAST 56TH STREET
INDIANAPOLIS, IN 46249-2801

DFAS-ISO/DTI

May 11, 1998

MEMORANDUM FOR DEPARTMENT OF DEFENSE INSPECTOR GENERAL,
ATTN: DIRECTOR, FINANCE AND ACCOUNTING

SUBJECT: Preliminary Results on the Audit of Allegations Related
to Defense Finance and Accounting Service (DFAS)
Support of Automated Information Systems
(Project No. 8FG-8007)

We have reviewed the preliminary results of the subject audit and concur that all issues have been adequately addressed. Comments submitted by the Financial Systems Activities (FSAs) have also been reviewed. Most comments centered around the need to document processes and procedures. We concur with the need for accurate and complete documentation and have already taken steps to strengthen this area with three additional Mid-Tier Technical Guidance memorandums being released this month. We will continue to work with the FSAs to ensure all areas of concern are addressed and documented. We are also making plans to reactivate our quarterly Mid-Tier working group meetings within the next 90 days. These meetings will provide another forum for improved communications.

If I may be of further service, please contact me at (317) 510-5937 or Mr. Ed Broyles at (317) 510-5857. Ed's email is ebroyles@cleveland.dfas.mil.

Paul E. Brustad
Director

CC:
DIRECTOR FOR INFORMATION AND TECHNOLOGY,
DEFENSE FINANCE AND ACCOUNTING SERVICE
HEADQUARTERS

Appendix E. Report Distribution

Office of the Secretary of Defense

Under Secretary of Defense (Comptroller)
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Deputy Comptroller (Program/Budget)
Assistant Secretary of Defense (Public Affairs)
Assistant Secretary of Defense (Command, Control, Communications and Intelligence)
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Department of the Army

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Department of the Navy

Assistant Secretary of the Navy (Financial Management and Comptroller)
Auditor General, Department of the Navy
Superintendent, Naval Postgraduate School

Department of the Air Force

Assistant Secretary of the Air Force (Financial Management and Comptroller)
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Senate Subcommittee on Defense, Committee on Appropriations
Senate Committee on Armed Services
Senate Committee on Governmental Affairs
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House Committee on Government Reform and Oversight
House Subcommittee on Government Management, Information, and Technology,
Committee on Government Reform and Oversight
House Subcommittee on National Security, International Affairs, and Criminal Justice,
Committee on Government Reform and Oversight
House Committee on National Security

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Defense Finance and Accounting Service Comments



DEFENSE FINANCE AND ACCOUNTING SERVICE

1931 JEFFERSON DAVIS HIGHWAY
ARLINGTON, VA 22240-5291

DEC - 7 1998

DFAS-HQ/S

MEMORANDUM FOR DIRECTOR, FINANCE AND ACCOUNTING
DIRECTORATE, OFFICE OF THE INSPECTOR
GENERAL, DEPARTMENT OF DEFENSE

SUBJECT Draft Audit Report on Management of DFAS Mid-Tier Systems
(Project No. 8FG-8007)

This is in response to your draft audit report dated September 23, 1998, requesting Defense Finance and Accounting Service (DFAS) management comments on the subject audit report. DFAS comments on the recommendations and findings are provided below

Recommendation 1 - As reported in the DFAS Infrastructure Services Organization (ISO) FY 1998 Annual Statement of Assurance, we reactivated the quarterly Mid-Tier working group in September 1998 and will hold the first joint meeting in December 1998. This action meets the requirement of resuming the quarterly reviews to establish documentation rules for Mid-Tier systems - ACTION COMPLETE

Recommendation 2 - As indicated above, we have reactivated the quarterly Mid-Tier working group. We will include in our agenda for the quarterly review a discussion of staffing, system access and security, and policy and procedures. This action meets the requirement of Recommendation 2. - ACTION COMPLETE

Recommendation 3 - As reported in the DFAS ISO FY 1998 Annual Statement of Assurance, our organization has established an Internal Control weakness assessment milestone (the goal of which is the establishment of Performance Measures to determine if policies and procedures are providing a benefit) to track the performance of implementing mid-tier policies and procedures and to accurately track project costs to allow for appropriate decisions to be made. Our projected milestone completion date has been established as September 1999. This action will meet the requirement of developing and implementing a plan for Mid-Tier system performance measurement and monitoring tools to track the efficiency of system projects.

My point of contact is Mr. Ed Cmar, DFAS ISO External Audit Liaison, at commercial (614) 692-5278 or DSN 830-5278

Joanne P. Annetta
for C Vance Kauzlarich
Director for Information and Technology

Audit Team Members

The Finance and Accounting Directorate, Office of the Assistant Inspector General for Auditing, DoD, prepared this report.

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